

CLAIMS

1. A wind power generation device comprising:

a substantially cylindrical duct;

an impeller having a plurality of blades protruding outward and rotatable around a duct axis; and

a nacelle that constitutes a streamlined pencil body together with the impeller and houses a generator that uses torque of the impeller,

characterized in that a duct has a side wall with a wing section so as to be able to produce a reduced pressure area at a rear of the duct and prevent generation of swirl at the rear of the duct,

the pencil body is provided so that a tip thereof is placed in the duct and a rear end thereof protrudes from a rear end of the duct so as to be close to a tip of the reduced pressure area produced at the rear of the duct, and blades of the impeller are provided in a maximum wind speed area in the duct.

2. The wind power generation device according to claim 1, characterized in that a chord of the wing section of the side wall of the duct is inclined at a predetermined angle to the duct axis, and a protruding length of the rear end of the pencil body from the rear of the duct is adjusted according to a position of the tip of the reduced pressure area that changes depending on the predetermined angle.

3. The wind power generation device according to claim 2, characterized in that the predetermined angle is 2° to 12°,

and the protruding length of the pencil body from the rear of the duct is set to 0.1 to 0.4 times the duct length.

4. The wind power generation device according to claim 1, 2 or 3, characterized in that the blades of the impeller are provided within a range of 0.07 times the duct length in a forward direction, and 0.18 times the duct length in a rearward direction with respect to a minimum inner diameter portion of the duct.